

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

REC'D 08 MAR 2005

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Applicant's or agent's file reference 39163-0057	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/CA 03/01582	International filing date (day/month/year) 17.10.2003	Priority date (day/month/year) 18.10.2002
International Patent Classification (IPC) or both national classification and IPC B29C45/17		
Applicant INJECTNOTECH INC. et al.		


- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 3 sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 06.05.2004	Date of completion of this report 07.03.2005
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EXAMINATION REPORT**

International application No. **PCT/CA 03/01582**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, Pages

1-9 as originally filed

Claims, Numbers

3 (part), 4-13 filed with telefax on 03.02.2005
1, 2, 3 (part) filed with telefax on 24.02.2005

Drawings, Sheets

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-13
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: US-A-4 684 101 (WAGNER EARL F ET AL) 4 August 1987 (1987-08-04)
D2: PATENT ABSTRACTS OF JAPAN vol. 1995, no. 04, 31 May 1995 (1995-05-31)
& JP 07 009456 A (SEKISUI CHEM CO LTD), 13 January 1995 (1995-01-13)
D3: US-A-6 120 279 (VOVAN TERRY) 19 September 2000 (2000-09-19)

- 2.1 With regard to the subject-matter of independent apparatus claim 1, document **D1** which is considered to represent the most relevant state of the art, discloses a mold insert system for an injection mold apparatus comprising a mold cavity plate and a mold core plate each secured to mold bases, relatively movable between open and closed positions, each having opposing faces, said faces meeting to define a mold cavity between the two faces, said cavity defining the shape of a molded article (see figure 2), at least one of said faces defining a facial pocket (figure 2: "socket 64" terminating in "seat 68") therein for insertion of a mold insert ("moulding head 72"), said facial pocket defining an insert passageway extending from the facial pocket through the plate and base (see figure 2), said mold insert secured to an insert rod ("shank portion 76"), said insert rod including at least one transverse slot extending thereacross (figures 4: "slot-like mortices 80, 82"; figure 5: "mortice 132"), said insert rod insertable into said passageway to a prelock position, whereat said insert is partially inserted into said facial pocket (position prior to contact between surfaces 102 and 104; see column 4, lines 10-18); said mould base defining a transverse passageway ("passage 88") extending transversely to and communicating with said insert passageway (see figure 2); a locking member ("retainer pin 96") being insertable into said transverse passageway such that a portion of said locking member is positioned within the at least one slot of the insert rod (see figure 2).
- 2.2 The subject-matter of claim 1 differs from the disclosure of document D1 in that the locking member is rotatable about its axis when it is inserted in the transverse passageway such that the insert rod may be urged to move between said prelock and fully inserted positions by rotation of said locking member about its axis. Therefore, the subject-matter of **claim 1 is novel** (Article 33(2) PCT).

- 2.3 The problem to be solved by the present invention may therefore be regarded as providing an alternative way of moving an insert between prelock and fully inserted positions.
- 2.4 The solution to this problem proposed in **claim 1 of the present application is considered as involving an inventive step** (Article 33(3) PCT) for the following reasons:
- 2.4.1 According to document **D1**, a wedging surface on the locking member ("retainer pin 96") is camming with at least one slot ("mortice 80") extending across the insert rod in order to move the insert rod between its prelock and fully inserted positions by wedging action (column 4, line 17). No rotation of the locking member is disclosed in D1.
- 2.4.2 Document **D2** discloses a locking member ("press bush 6") which is rotatable (see circular cross section in figure 1b) about its axis when it is inserted in the transverse passageway ("bush hole 2"). However, rotation of that locking member only brings it into a second position, wherein upon pushing, it cams with the insert rod by wedging action in order to extract the mould insert. D2 neither discloses a prelock position, nor does it disclose that rotation of the locking member can move the insert into a fully inserted position.
- 2.4.3 Document **D3** discloses a locking member ("lock member 50") which is rotatable (see figures 3 to 6) about its axis when it is inserted in the transverse passageway ("longitudinal bore 46"). However, rotation of that locking member only lifts up the mould insert (see figures 5 and 6). D3 neither discloses a prelock position, nor does it disclose a configuration of the locking member suitable for moving the insert into a fully inserted position by rotation of the locking member.
- 2.4.4 Therefore, the skilled person needs to exercise inventive skill in order to realize that a rotatable locking member may be used for moving the insert from its prelock position into its fully inserted position.
- 2.5 Claims 2 to 13 are dependent on claim 1 and as such also meet the requirements of

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the PCT with respect to novelty and inventive step.

- 3.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant **background art** disclosed in the documents **D1 to D3** is not mentioned in the description, nor are these documents identified therein.
- 3.2 Independent claim 1 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

CLAIMS:

1. A mold insert system for an injection mold apparatus comprising a mold cavity plate and a mold core plate each secured to mold bases, relatively movable between open and closed positions, each having opposing faces, said faces meeting to define a mold cavity between the two faces, said cavity defining the shape of a molded article, at least one of said faces defining a facial pocket therein for insertion of a mold insert, said facial pocket defining an insert passageway extending from the facial pocket through the plate and base, said mold insert secured to an insert rod, said insert rod including at least one transverse slot extending thereacross, said insert rod insertable into said passageway to a prelock position, whereat said insert is partially inserted into said facial pocket; said mold base defining a transverse passageway extending transversely to and communicating with said insert passageway; a locking member being insertable into said transverse passageway such that a portion of said locking member is positioned within the at least one slot of the insert rod, wherein the locking member is rotatable about its axis when it is inserted in the transverse passageway such that the insert rod may be urged to move between said prelock and fully inserted positions by rotation of said locking member about its axis.

2. A mold insert system as recited in claim 1 wherein the locking member has a cam rod extending axially therefrom offset from the axis of the locking member, said offset cam rod engaging the slot of the insert rod such that rotation of said locking member about said axis causes the offset cam rod to urge the insert rod and insert between said prelock and fully inserted positions.

3. A mold insert system as recited in claim 1 or 2 wherein said locking member is rotatable about its axis by means of a cam handle positioned on the

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periphery of said mold base, said handle moving from a first position where said locking member positions said insert in said prelock position to a second position whereat said locking member engages and moves said insert rod and insert to said fully inserted position.

4. A mold insert system as recited in claim 3 wherein said cam handle may be locked in said first and second positions.

5. A mold insert system as recited in claim 4 wherein said cam handle is locked by means of dowels insertable through the cam handle into openings adapted for accepting said dowels at the respective first and second positions.

6. A mold insert system as recited in claim 1 wherein said insert rod is attached to said insert by means of a screw having a head positioned at a lead end of the rod and extending through said rod engaging said insert.

7. A mold insert system as recited in claim 6 wherein said insert and insert rod are biased in the prelock position by a tension spring positioned at said lead end of the insert rod between the screw head and the rod.

8. A mold insert system as recited in claim 1 wherein said insert rod is integrally formed to the insert.

9. A mold insert system as recited in claim 1 wherein said locking rod includes gear members and said at least one insert rod slot forms mating portions of said gear members into which said gear members may be inserted, such that when said gear members engage said mating portions, rotation of said insert rod about its axis causes said insert rod and insert to move between

the prelock and fully inserted insert positions.

10. A mold insert system as recited in claim 1 whereby said locking rod includes a slanted profile portion which engages said insert rod slot, said insert rod slot being formed such that rotation of the locking rod causes the slanted profile portion to urge to insert rod between the prelock and fully inserted positions.

11. A mold insert as recited in claim 1 wherein said locking rod includes an angled pin portion which engages said slot in the insert rod, and rotation of said locking rod causes said angled pin portion to advance and retract axially and such advancement and retracting of the angled pin urges said insert rod and insert to move between said prelock and fully inserted positions.

12. A mold insert system as recited in any one of claims 1, 2 and 6 to 11 wherein said locking rod is rotated about its axis by means of a knob positioned on a peripheral end of the locking rod.

13. A mold insert system as recited in any one of claims 1 to 12 wherein said insert and insert rod are biased in the prelock position by means of a spring bumper positioned within the facial pocket.

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